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Teaching Tip
Using a Group Role-Play Exercise to Engage Students in Learning Business Processes and ERP

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ABSTRACT

With the increasing process-centric focus and proliferation of Enterprise Resource Planning (ERP) systems in organizations, it is imperative for business graduates to understand cross-functional business processes and ERP system's role in supporting business processes. However, this topic can be rather abstract and dry to undergraduate students, most of whom have little work experience. In this paper, we present a group role-play exercise that has been used in an introductory management information systems course to actively engage students in learning business processes and ERP systems. Student learning outcomes and their perceptions of the group role-play exercise were measured using a questionnaire. Results indicate that student knowledge of three key business processes and ERP system's role in supporting business processes increased significantly after participating in the role-play exercise. Students also had positive perceptions of the group role-play exercise. Teaching suggestions for implementing the group role-play exercise, as well as contributions of this study, are discussed.

Keywords: Business processes, Enterprise resource planning (ERP), Role-play, Group exercise

1. INTRODUCTION

An Enterprise Resource Planning (ERP) system is a highly integrated system that uses a common data repository for information sharing across functional areas leading to optimized business processes (Alshare and Lane, 2011). With the increasing process-centric focus and proliferation of ERP systems in organizations, it is imperative for business graduates to understand cross-functional business processes and ERP system's role in supporting business processes (Cronan and Douglas, 2011; Hustad and Olsen, 2013; Seethamraju, 2011, 2012). Even accreditation bodies, such as the Association to Advance Collegiate Schools of Business (AACSB), have given cross-functional integration importance in program evaluation and accreditation criteria (Seethamraju, 2012). The Association of Information Systems and the Association for Computing Machinery have also suggested that Management Information Systems (MIS) curriculum include process modeling and process knowledge as key skills for MIS students (Gorgone et al., 2006). Furthermore, studies have shown that business graduates who have ERP skills receive higher salaries than those that do not have ERP skills (Andrea, Dittmer, and Stove, 2008; Sager et al., 2006).

Unfortunately, it can be challenging for instructors to engage students in understanding the concepts associated with business processes and ERP systems as these topics can be rather abstract and dry to undergraduate students, most of whom have little work experience from which to draw. In an attempt to address this challenge, we adopt role-play, an experiential learning technique that can make learning tedious topics more enjoyable (Reid, 1985) and stimulate active learning (Freeman, 2003; Kerr, Troth, & Pickering, 2003). More specifically, we use a group role-play exercise in an introductory MIS course that is taken by all business majors to actively engage students in learning cross-functional business processes and ERP systems.

The remainder of this paper is organized as follows: first, we review the literature on teaching business processes and ERP, as well as the use of role-play in information systems education; second, we describe the group role-play exercise in detail; third, we present quantitative and qualitative survey results to illustrate the effectiveness of the group role-play exercise; and lastly, we provide teaching suggestions for implementing the exercise and discuss the contributions of this study.

2. LITERATURE REVIEW

2.1 Teaching ERP and Business Processes

In an effort to produce business graduates who have an understanding of business process orientation and cross-functional integration, educators have incorporated various pedagogical practices into business curricula, including case studies (Venkatesh, 2008; Winkelmann and Leyh, 2010), hands-on exercises (Jaeger et al., 2011; Pridmore et al., 2014), and simulation games using leading ERP packages such as SAP (Léger, 2006; Seethamraju, 2011). Despite their effectiveness in enhancing student learning of business processes and ERP systems, one area under-addressed by current pedagogical practices is how to introduce the concepts associated with business processes to students *prior* to engaging them in hands-on exercises, simulation games, or case analyses of ERP. This is a critical area because students need to have a basic understanding of business processes and their cross-functional nature before they can truly gain knowledge from hands-on activities.

To fill the gap in current pedagogical practices used to teach business processes and ERP, we use a group role-play exercise to introduce basic concepts of cross-functional business processes and to prepare students for hands-on, simulated ERP exercises. Before we describe our implementation of the group role-play exercise, a review of the use of role-play in Information Systems (IS) education is discussed in the next section.

2.2 Use of Role-play in IS Education

Role-play is a form of experiential learning (Lewis and Williams, 1994). Experiential learning theory defines learning as "the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, p. 41). Increasing evidence has shown that experiential learning can increase students' ability to apply newly learned knowledge to real-life situations and become self-directed learners (Boggs, Mickel, and Holtom, 2007; Comer and Vega, 2006; Kolb and Kolb, 2006; Tucker and Tromley, 2005). As a form of experiential learning, role-play allows participants to act out a role in a particular situation and immerse themselves in interactions that mimic what they might encounter in the real world (Feinstein, Mann, and Corsun, 2002). This allows participants to become more involved and it helps to create a longer lasting memory (Broadwell and Broadwell, 1996), as compared with the traditional method of teaching via lectures and text-based exercises.

Role-play has been used in teaching a wide range of business and technology related disciplines such as accounting (Specht and Sandin, 1991), business ethics (Brown, 1994), marketing (Gremler, Hoffman, and Keaveney, 2000), and computer science (Börstler and Schulte, 2005). In the IS field, role-play has been proven to be an effective method to improve the content and process related communication skills of IS students (Chen, Muthitacharoen, and Frolick, 2003). Role-play has helped students understand information systems case studies (Kerr, Troth, and Pickering, 2003), practice decision-making and strategizing processes required for systems acquisition (Freeman, 2003), apply systems analysis knowledge (Costain and McKenna, 2011; Mitri and Cole, 2007), simulate the buying and selling of ERP software solutions (Rudra et al., 2011), simulate the adoption of a production control system (Al-Shammari, 2005), and gain a better understanding of various aspects of inter-organizational business processes (Jaeger et al., 2011).

As a method of experiential learning, role-play is helpful for understanding concepts and activities that require interpersonal interaction (Feinstein, Mann, and Corsun, 2002). To understand cross-functional business processes, students need to know how to coordinate work among various business functions, which involves a great deal of interpersonal interaction among employees, vendors, and even customers. Thus, we believe that role-play is a well-suited method to help students learn cross-functional business processes, which provides a foundation for understanding the importance of using an ERP system to support these business processes.

In existing literature that discusses the use of role-play to teach business processes and ERP, Al-Shammari (2005) assessed student learning experience in a business process re-engineering course and found that role-play was the most useful technique in improving student's cognitive, affective, and interactive skills, as compared to group assignments, case method, invited lecture, and electronic collaboration. However, no detailed description of the role-play exercise was provided in this paper. Jaeger et al. (2011) used role-play for a global supply chain activity where students worked in teams using an SAP ERP system to execute inter-organizational business processes. They found that students who participated in the role-play activity had a better understanding of various aspects of inter-organizational business processes than those who did not. Despite its significant contributions to help students understand business processes, this study did not address how to introduce business processes and ERP related concepts to students *prior* to engaging them in hands-on ERP exercises. In the next section, we present in detail the group role-play exercise that we implemented in an introductory information systems course to introduce basic concepts of cross-functional business processes and to prepare students for hands-on, simulated ERP exercises.

3. LEARNING THROUGH A GROUP ROLE-PLAY EXERCISE

3.1 Overview of the Group Role-Play Exercise

The group role-play exercise is used to actively engage students in learning about business processes, especially the cross-functional nature of business processes. The role-play exercise was developed as a learning aid to complement the content from three chapters in the textbook titled "Essentials of Business Processes and Information Systems" (Magal and Word, 2009) that focus on three generic business processes – procurement, fulfillment, and production – from the perspective of a fictitious skateboard company. The textbook is used in a 16-week introductory MIS course to teach a 5-week module that focuses on the topic of using ERP systems to support business processes.

The learning objectives for the role-play exercise are to ensure that students can 1) identify the key steps in business

processes and the data, document, and information flows associated with it; 2) explain the role of different functional areas in completing business processes and the challenges of doing so without the use of an ERP system; and 3) understand ERP system's role in supporting cross-functional business processes.

The group role-play exercise follows three generic steps as shown in Figure 1, but has content that is unique depending on which of the three business processes from the textbook - procurement, fulfillment, and production - is being taught. Each exercise (with all three steps) can fit into a 75-minute class. The three generic steps in the group role-play exercise are explained in detail below. For illustration purposes, we will use the procurement process as an example throughout the rest of the paper.

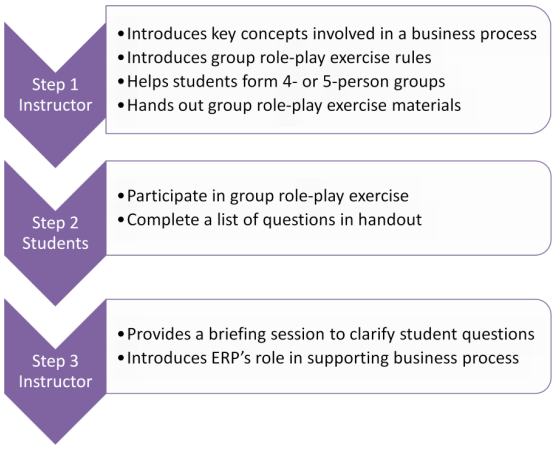

Figure 1. Steps in the group role-play exercise

3.2 Steps in the Group Role-Play Exercise

3.2.1 Step 1: In step 1 of the group role-play exercise, the instructor starts with a brief lecture that defines the business process and the key concepts and assumptions associated with the process. The lecture also includes a brief discussion of the physical flow (i.e., the steps necessary to complete the process) and the data and document flow (i.e., the data and documents that are generated when each step in the process is completed) associated with the process, as well as the functional area responsible for completing each step in the process (see Figure 2 for an example of the procurement process; see Appendix A for a larger version of the same figure). The purpose of this brief lecture is to provide students with basic knowledge and a "big picture" view of the business process so that they are prepared to participate in subsequent steps of the exercise.

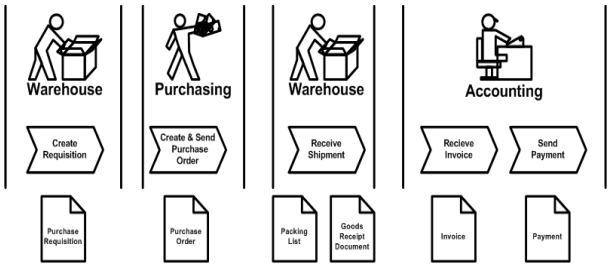

Figure 2. Key functional areas, steps, and documents that are involved in the procurement process (Reprinted with permission from Magal and Word, 2009)

Next, the instructor introduces the group role-play exercise. Specifically, students are told that they will be forming groups of 4-5 members, with each student in the group taking on the role of an employee or external partner to walk through a procurement process in a typical manufacturing company. To coordinate the various steps in the procurement process, students are instructed to refer to textbook content and discuss with their group members if necessary.

Students then form their groups, and each group is provided a packet (see Appendix A for the packet for the procurement process) containing the key documents that are generated when a particular step in a business process is completed. For example, when covering the procurement process, the packet contains a purchase requisition, a purchase order, a packing list, a goods receipt document, and an invoice. Students are instructed that they will use the appropriate documents in the packet according to their roles and pass the documents among team members to simulate the flow of information in the procurement process.

Additionally, the group receives a table with a list of questions (see Appendix B for a sample) that they need to complete as part of the exercise. The list of questions was designed to address the first two learning objectives of the role-play exercise (learning objective three is addressed in step 3 below). For learning objective one, "identify the key steps in business processes and the data, document, and information flows associated with it," we ask students to answer the following questions for each step of the procurement process, "What triggers this step?," "What document is received and/or created in this step?," and "What are the key data in each document?" For learning objective two, "explain the role of different functional areas in completing business processes and the challenges of doing so without the use of an ERP system," we ask students the following questions, "Which functional area is involved in this step?," "For the document that is created in this step, how many copies are generated?," and "Which functional area keeps each copy of the document?" By requiring students to answer these questions in a group setting, it encourages them to actively seek information from group members in order to gain an understanding of how the different roles interact to coordinate each step in the procurement process.

3.2.2 Step 2: Students begin the role-play exercise by dividing up the roles of the different functional areas. For example, if a group of five students is dividing up roles based on the sample procurement process in Figure 2, two students will split the warehouse role (one student will take the responsibility of creating the requisition; the other student will take the responsibility of receiving the shipment), one student will take on the purchasing role, one student will take on the accounting role, and one student will take on the vendor role (although "vendor" is not shown in Figure 2, an invoice is created by a vendor and sent to the accounting department; thus, a vendor role is required in this exercise). Working together as a group, students answer the questions in the table using the textbook and the packet of documents they are given. Each student takes the lead in answering the questions associated with the role that they have taken. For example, the student who has taken on the role of purchasing will take the lead in answering the questions associated with the step involving the purchasing department (see "Create & Send Purchase Order" column in Appendix B for these questions). Each student is also responsible for identifying what documents are received and/or generated by his/her role, explaining the key data on the document to their teammates, and passing the documents to the next role involved in the process. At the end of step 2, each group should have answered all the questions in the table that was given to them in step 1.

3.2.3 Step 3: This step starts with a briefing session where the questions in the table (see Appendix B) are discussed. The briefing session can be implemented in one of two formats. In the first format, the instructor leads the discussion by walking through the steps in the process and posing the questions in the table to the students. In the second format, the instructor will have one of the groups come to the front of the class to walk through the steps in the process while the instructor poses questions, either to the members of that group or to the rest of the class. In either format, the instructor helps students figure out the correct answers to the questions and clarifies any confusion students may have. The second format usually takes longer to complete than the first. Depending on how much time an instructor has in a class, the instructor can choose between the two formats.

The main point of this briefing is to go through the information flow and highlight the inefficiencies of completing the steps in the process, as well as the difficulty in sharing information between functional areas when not using an ERP system. Examples of both instance-level (e.g., has the purchase order been created?) and process-level questions (e.g., which vendor do we buy the most products from?) are posed to show how difficult it would be to answer these questions without the support of an ERP system.

The instructor then discusses the vital role that an ERP system can play in supporting the process and uses screenshots from a simulated SAP ERP environment to illustrate how much more efficient the process can be when using an ERP system. At this point, it is important to emphasize how real-time information can be shared between functional areas and how some of the steps in the process can be automated. By completing the instructor-led discussion in step 3, the third learning objective for the role-play exercise, "understand ERP system's role in supporting cross-functional business processes," is addressed.

At the end of step 3, the instructor collects the completed tables from the groups for the purpose of giving students points for participating in the role-play exercise. As a complement to the role-play exercise, students use the Internet outside of class to complete exercises in a simulated ERP environment so they can see first-hand the effectiveness of using an ERP system to support business processes.

4. OUTCOMES OF USING THE GROUP ROLE-PLAY EXERCISE

4.1 Questionnaire and Participants

Questionnaires were administered to measure students' knowledge of ERP systems, understanding of key business processes, and perceptions regarding the group role-play exercises. The questionnaire was distributed in class after the third role-play exercise was completed. While questionnaires were distributed to 113 students from 4 sections of an introductory MIS course, 3 questionnaires were removed from the dataset because the subjects omitted more than 50% of the questions. Thus, we had 110 valid responses.

To measure student knowledge about the three key business processes and the role of ERP systems in supporting those business processes, we adapted ten questions from Seethamraju (2007). Students were asked to give a self-assessment of their knowledge before and after learning about the three key business processes. The self-assessment scale ranged from 1 to 7, where 1 represented a very low level of knowledge and 7 represented a very high level of knowledge.

In addition, we adapted eight questions from Kerr, Troth, and Pickering (2003) and Costain (2011) to measure student perceptions regarding the group role-play exercises. Students were asked to rate the extent to which they agreed or disagreed with each of ten statements. The associated scale ranged from 1 to 7, where 1 represented a strong level of disagreement and 7 represented a strong level of agreement.

We also included two open-ended questions to solicit student feedback on the strengths and weaknesses of the group role-play exercises.

4.2 Quantitative Results

Table 1 summarizes student self-assessment mean scores before and after learning the three key business processes and participating in the role-play exercises, the differences between both scores, and t-test results comparing both mean scores for each knowledge dimension. Results show that all difference scores are above 3 and all t-tests are significant. This indicates that student knowledge of the three key business processes and ERP system's role in supporting business processes increased significantly after participating in the role-play exercises.

Statement of knowledge*	Before Mean	After Mean	Difference (After – Before)	t, significant level
1. Knowledge of business terminology associated with the procurement process (such as purchase requisition, purchase order, good receipt document, etc.)	2.117	5.658	3.541	t=26.897 p<.001
2. Knowledge of business terminology associated with the fulfillment process (such as quotation, purchase order, sales order, picking document, etc.)	2.243	5.766	3.523	t=26.025 p<.001
3. Knowledge of business terminology associated with the production process (such as planned order, production order, material withdrawal slip, etc.)	2.081	5.721	3.64	t=27.391 p<.001
4. Knowledge of the interrelationships and interdependencies between various functions (such as sales, productions, warehouse, accounting, etc.)	2.518	5.773	3.255	t=23.765 p<.001
5. Knowledge of the concept of a business process	2.982	6.009	3.027	t=21.116 p<.001
6. Knowledge of business processes and activities in procurement	2.373	5.564	3.191	t=20.625 p<.001
7. Knowledge of business processes and activities in fulfillment	2.162	5.631	3.469	t=27.125 p<.001
8. Knowledge of business processes and activities in production	2.324	5.748	3.424	t=26.945 p<.001
9. Knowledge of the importance of the integrated nature of business processes	2.279	5.730	3.451	t=24.952 p<.001
10. Knowledge of the importance of ERP system's role in supporting cross-functional business processes	1.946	5.649	3.703	t=24.754 p<.001

*Each statement is rated on a 7-point scale, ranging from 1 – very low to 7 – very high.

Table 1. Self-assessment scores: before, after, difference and t-tests results

Table 2 summarizes student perceptions of the group role-play exercises. Mean scores for all statements are above 5 on a 7-point scale (ranging from 1 (strongly disagree) to 7 (strongly agree)). This indicates that students had positive perceptions of the group role-play exercises. Students agree that using group role-play exercises *is an effective method* for understanding cross-functional business processes (mean = 5.56, SD = 1.27) and ERP system's role in supporting cross-functional business processes (mean = 5.38, SD = 1.27). They found that the group role-play exercises *helped them understand* cross-functional business processes (mean = 5.38, SD = 1.38) and ERP system's role in supporting cross-functional business processes (mean = 5.38, SD = 1.35). The group role-play exercises also *stimulated students' interest in learning* more about cross-functional business processes (mean = 5.24, SD = 1.39) and about ERP system's role in supporting cross-functional business processes (mean = 5.11, SD = 1.41). Students felt that the group role-play exercises were *more enjoyable* than traditional methods of teaching, such as lectures (mean = 5.74, SD = 1.27), and *the instructor's briefing session* after the group role-play exercises helped them to reflect on the cross-functional business processes (mean = 5.91, SD = 1.08).

4.3 Qualitative Results

We asked the following two open-ended questions in the questionnaire to solicit student feedback:

1) What are the strengths or benefits of the group role-play exercises?
2) Are there any improvements you would suggest to make the group role-play exercises more beneficial to your learning?

When asked about the strengths or benefits of the group role-play exercises, students felt that the exercises were more exciting, fun, engaging, and interesting than the traditional lecture format. They also remarked that the exercises were a nice change of pace from lectures and created a more relaxed, comfortable, and less scary environment for learning. The group role-play exercises also provided a visual aid for students to better grasp and understand the business processes. This indicates that pairing the role-play exercises with traditional lectures caters to a wider range of learning styles which may enhance students' abilities to better understand the content. Moreover, the group role-play exercises encouraged teamwork and collaboration; students espoused the benefits of learning from each other during the exercises. Table 3 lists representative answers for the strengths, or benefits, of the group role-play exercises, summarized into four categories.

Statement about group role-play exercises*	Mean	SD
1. Using group role-play exercises is an effective method for understanding cross-functional business processes.	5.56	1.27
2. The group role-play exercises help me understand cross-functional business processes.	5.38	1.38
3. Using group role-play exercises is an effective method for understanding ERP systems' role in supporting cross-functional business processes.	5.38	1.27
4. The group role-play exercises help me understand ERP system's role in supporting cross-functional business processes.	5.35	1.35
5. The instructor's briefing session after the group role-play exercises helped me to reflect on the cross-functional business processes.	5.91	1.08
6. The group role-play exercises are more enjoyable than traditional methods of teaching (e.g., lectures).	5.74	1.27
7. The group role-play exercises stimulate my interest in learning more about cross-functional business processes.	5.24	1.39
8. The group role-play exercises stimulate my interest in learning more about ERP system's role in supporting cross-functional business processes.	5.11	1.41

*Each statement is rated on a 7-point scale, ranging from 1 - strongly disagree to 7 - strongly agree.

Table 2. Mean and Standard Deviation for Attitude towards Group Role-playing Exercises

1. The nature of the group role-play exercises
• It was more exciting and a good change of pace from the original lecture • Easier and more fun way to retain information • Makes a somewhat dull subject easier to learn by engaging with fellow peers • It helps to take a break from the lecture to actively think about what we're learning and discuss it with others • Learning about something together rather than individually is a great way to stimulate interest • My interest was stimulated and learned more efficiently
2. The type of learning environment that the group role-play exercises created
• Allows for a more relaxed learning environment • Lets the students work together to learn the material and overcome struggles by themselves. Sometimes students are scared to ask questions and this helps • Get to know classmates better and feel more comfortable in class • You get to know your classmates better; you are able to talk things out with them
3. The group role-play exercises encourage teamwork and collaboration
• Encourages teamwork and collaboration, simulates group/team situations in a corporate work environment • Teaches you how to work in a group and how to go about solving task with help from others • You get to meet and work with new people in the class while working together to learn and understand the material • Learn how to work as a team player. Able to see different perspectives from other students • I liked working together to come up with the answers and if someone didn't understand why that was the answer then someone in the group would explain • There are multiple people to assist you if you feel that you are having trouble understanding the process concepts • You get more feedback, can bounce ideas off of each other
4. The group role-play exercises help students understand content and visualize the processes
• It was easier to understand the process when we had to actually think it through and complete it • Allows us to work together and put ourselves in the shoes of the divisions • It was an organized way to help understand material and it kept me engaged • We all get involved and understand the concepts in a real life situation • The group exercises make it much easier to visualize the process involved. They also made it easier to understand when and why special documents are transferred between departments • I'm a visual learner so seeing this exercise gives me that visual I need to help understand the material

Table 3. Representative Answers for the Strengths, or Benefits, of the Group Role-play Exercises

1. Feedback on Design
• I think splitting the roles made it difficult to learn about the whole process. Instead of looking at the entire process I was only looking at my part. I think going over the entire process like you did after we worked in our groups was more beneficial • Too much focus on just my assigned role • Perhaps make it a bit more engaging, rather than us just answering questions • Make a way for the groups to collaborate in an easier way while doing the role play
2. Feedback on Instructions
• Slightly confusing • Use a real world case or example • Maybe providing a short description to each of the documents to help groups get started • Make some of the questions a little easier to comprehend; more description for what is being asked in the question
3. Feedback on Execution
• Make sure everyone talks more and discusses more • I don't think so, I believe that my lack of knowledge in group exercises came from the attitude of my group, they didn't really seem interested in the material. If there is some way to change everyone's attitude that might help • More focus on participation/more than one person doing all of the work
4. Feedback on the Briefing Session
• Make each group discuss part of the chart • More discussion after the exercises so you know your answers are correct and to put it into your head a different way

Table 4. Representative Answers for Improvements of the Group Role-play Exercises

The second question asked "Are there any improvements you would suggest to make the group role-play exercises more beneficial to your learning?" Approximately 48% of students stated "none," "n/a," or "no" for this question. For those providing feedback, four major areas emerged: the design, the instructions, the execution of the exercises, and the briefing sessions. Table 4 summarizes comments on these areas.

5. TEACHING SUGGESTIONS

Since incorporating the group role-play exercises in the MIS course, we have learned some important lessons. Based on our experience, we suggest the following tips for implementing the group role-play exercises. First, instructors should help students form groups instead of allowing students to form groups by themselves. Doing so will save class time and encourage students to start the exercise faster. When forming groups, it is helpful not to have the same students in one group for all three exercises. This encourages students to collaborate with different classmates and prevents students from being stuck with group members that are not interested in the exercises for all three exercises.

Second, it is extremely important to stress to students that they need to work as a group to complete the table so that they not only understand the responsibilities of their role but also how what they are doing affects the other roles involved in the process. If they work in isolation within their group, it defeats the purpose of the exercise.

Third, it is helpful to walk through the room to check on the progress that each group is making and to see if they have any questions. Unfortunately, students tend not to ask questions for fear of looking stupid in front of their peers; however, if prompted they almost always have questions, especially the first time they are participating in the role-play exercise. Additionally, checking on the progress of all groups helps in identifying common confusions students might be having and the mistakes that they might be making. These are also areas that the instructor may want to spend more time discussing during the briefing session after the group role-play exercise.

Fourth, making the group role-play exercise solutions available to students after class helps them prepare for the exam that covers the 5-week ERP module. Not only did some students request solutions for the group role-play exercises so that they can use them to prepare for the exam, but as indicated in the questionnaire results, students found that the group role-play exercises helped them understand cross-functional business processes and ERP systems' role in supporting cross-functional business processes.

Lastly, it is important to note that we have only employed the role-play exercises in an introductory MIS course and that this is often the first time that students have even heard of an enterprise resource planning system. Depending on the level of the course where the exercises are

being used, instructors may choose to modify the role-play exercise materials to meet the needs of a more advanced course. For example, instructors may want to have students develop their own documents/data rather than use the pre-existing documents that are in the textbook and may even ask students to break down the data into different categories such as existing data and new data. Instructors can also provide a real world case or ask each group to pick a real world company for the role-play exercise.

6. LIMITATIONS AND CONTRIBUTIONS

One weakness of our study is that we did not measure actual student knowledge in assessing the effectiveness of the group role-play exercises. Rather, students were asked to give a self-assessment of their knowledge before and after learning about the three key business processes. Future research should therefore include an objective measure of student knowledge administered before and after the group role-play exercises.

Our study makes several contributions. First, it fills a gap in the current pedagogical practices of teaching business processes and ERP by presenting a teaching method that uses a group role-play exercise to engage students. To our knowledge, there is very little pedagogical research that discusses the use of role-play to teach business processes and ERP, especially *prior* to engaging students in hands-on ERP exercises. Second, the role-play exercises prepare students with a basic understanding of business processes and their cross-functional nature before students gain knowledge from subsequent hands-on exercises, simulation games, or case analyses of ERP. The role-play exercises complement the use of hands-on activities in learning cross-functional business processes and ERP system's role in supporting processes.

7. CONCLUSION

In this paper, we present a group role-play exercise that has been used in an introductory MIS course to actively engage students in learning business processes and ERP systems. We measured student learning outcomes and their perceptions of the group role-play exercises using a questionnaire. Results indicate that student knowledge of the three key business processes and ERP system's role in supporting business processes increased significantly after participating in the role-play exercises. Students also had positive perceptions of the group role-play exercises. Based on our experience implementing the group role-play exercises, we offered several teaching suggestions for instructors who wish to adopt this practice.

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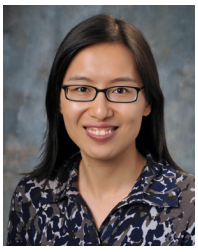
AUTHOR BIOGRAPHIES



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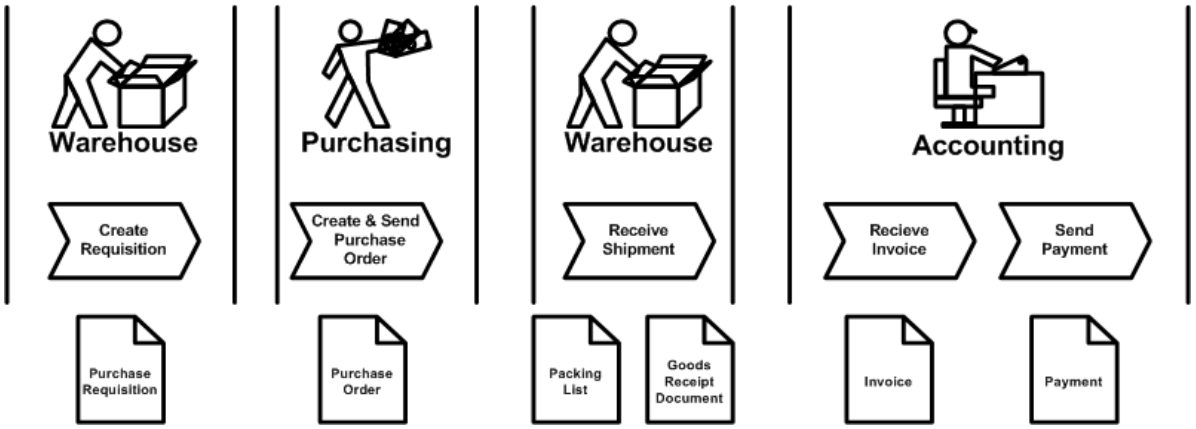
Appendix A. A sample packet of materials for the procurement process

A Basic Procurement Process



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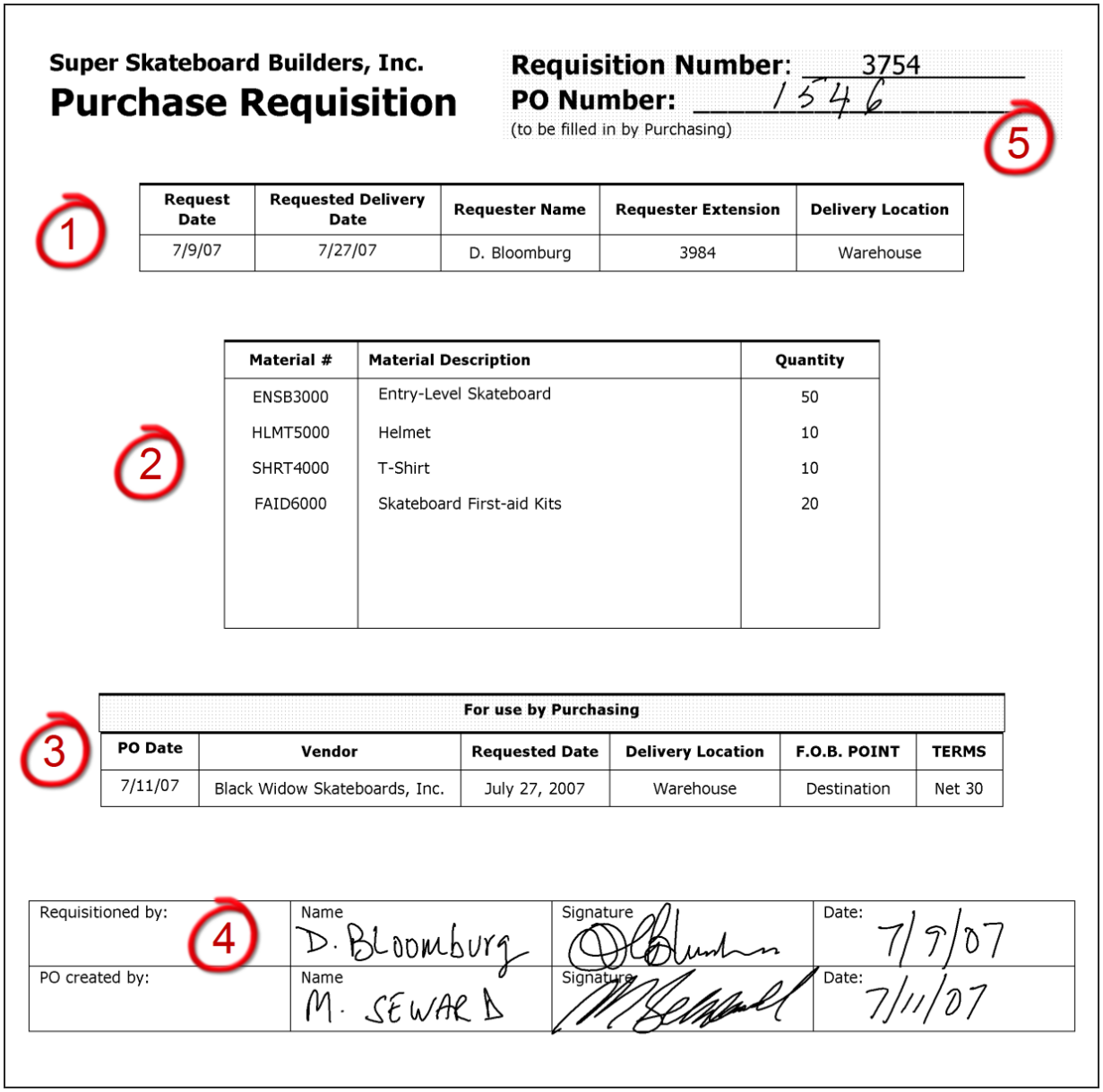
- Key questions regarding steps
    - What is the trigger of each step?
    - What is the purpose of each step?
    - Who is involved in each step?
    - How is communication and coordination accomplished?
- Key questions regarding documents
    - Who creates the document? When?
    - What is the purpose?
    - What are the key data?
    - How does data change across the process?
    - Who is responsible for changing the data?
- Key terms involved in the procurement process
    - Free-on-board (FOB) point
    - Payment terms: Net nn, X% mm/N nn
    - Three-way match



Super Skateboard Builders, Inc.

Purchase Requisition

Requisition Number: 3754

PO Number: 1546

(to be filled in by Purchasing)

5

1

Request Date	Requested Delivery Date	Requester Name	Requester Extension	Delivery Location
7/9/07	7/27/07	D. Bloomburg	3984	Warehouse

2

Material #	Material Description	Quantity
ENSB3000	Entry-Level Skateboard	50
HLMT5000	Helmet	10
SHRT4000	T-Shirt	10
FAID6000	Skateboard First-aid Kits	20

3

For use by Purchasing					
PO Date	**Vendor**	**Requested Date**	**Delivery Location**	**F.O.B. POINT**	**TERMS**
7/11/07	Black Widow Skateboards, Inc.	July 27, 2007	Warehouse	Destination	Net 30

Requisitioned by: 4	Name: D. Bloomburg	Signature: D Bloomburg	Date: 7/9/07
PO created by:	Name: M. SEWARD	Signature: M Seward	Date: 7/11/07

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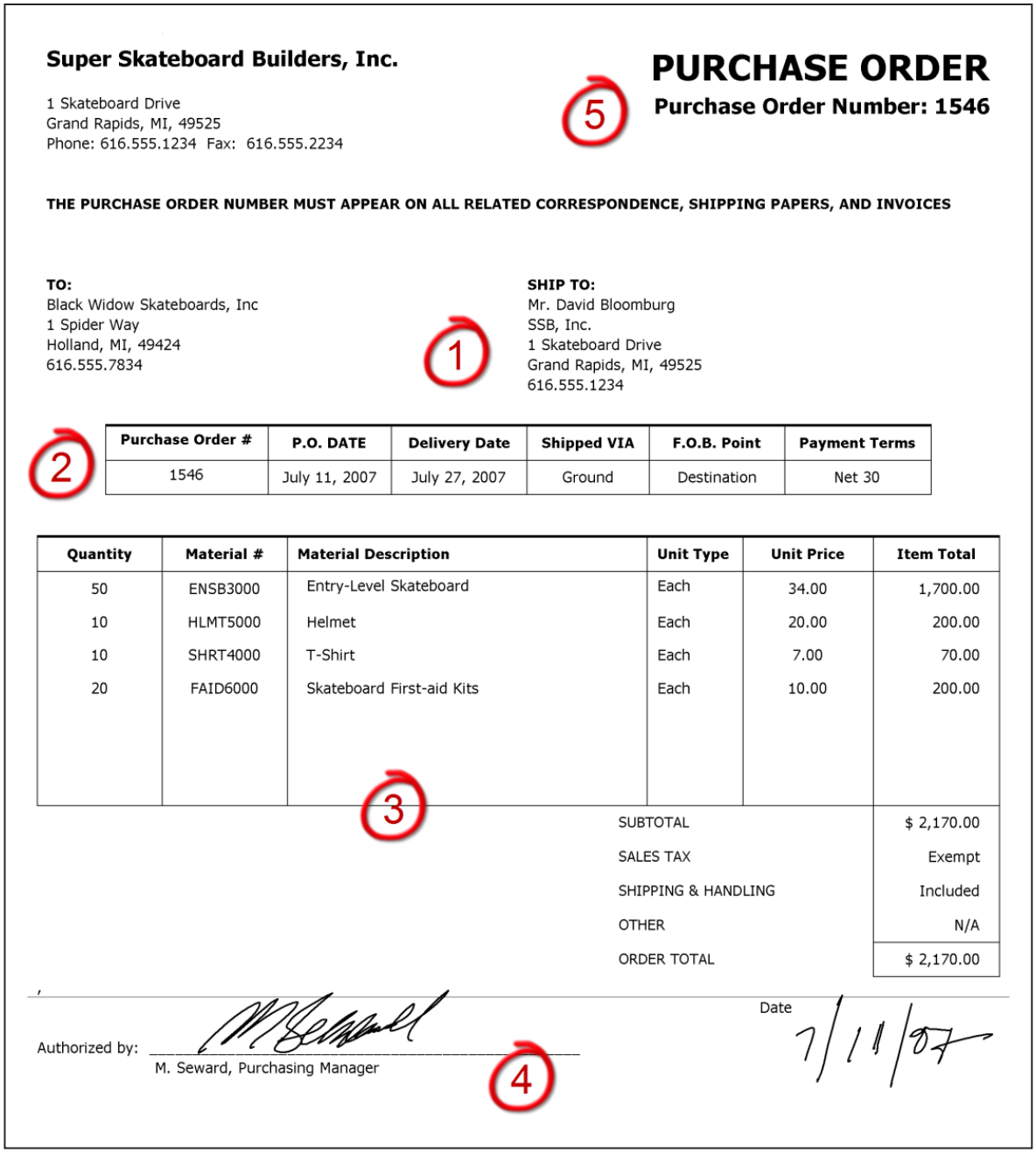

Super Skateboard Builders, Inc.

1 Skateboard Drive
Grand Rapids, MI, 49525
Phone: 616.555.1234 Fax: 616.555.2234

5

PURCHASE ORDER

Purchase Order Number: 1546

THE PURCHASE ORDER NUMBER MUST APPEAR ON ALL RELATED CORRESPONDENCE, SHIPPING PAPERS, AND INVOICES

TO:
Black Widow Skateboards, Inc
1 Spider Way
Holland, MI, 49424
616.555.7834

1

SHIP TO:
Mr. David Bloomburg
SSB, Inc.
1 Skateboard Drive
Grand Rapids, MI, 49525
616.555.1234

2

Purchase Order #	P.O. DATE	Delivery Date	Shipped VIA	F.O.B. Point	Payment Terms
1546	July 11, 2007	July 27, 2007	Ground	Destination	Net 30

Quantity	Material #	Material Description	Unit Type	Unit Price	Item Total
50	ENSB3000	Entry-Level Skateboard	Each	34.00	1,700.00
10	HLMT5000	Helmet	Each	20.00	200.00
10	SHRT4000	T-Shirt	Each	7.00	70.00
20	FAID6000	Skateboard First-aid Kits	Each	10.00	200.00

3

SUBTOTAL	$ 2,170.00
SALES TAX	Exempt
SHIPPING & HANDLING	Included
OTHER	N/A
ORDER TOTAL	$ 2,170.00

Authorized by: _____
M. Seward, Purchasing Manager

4

Date 7/11/07

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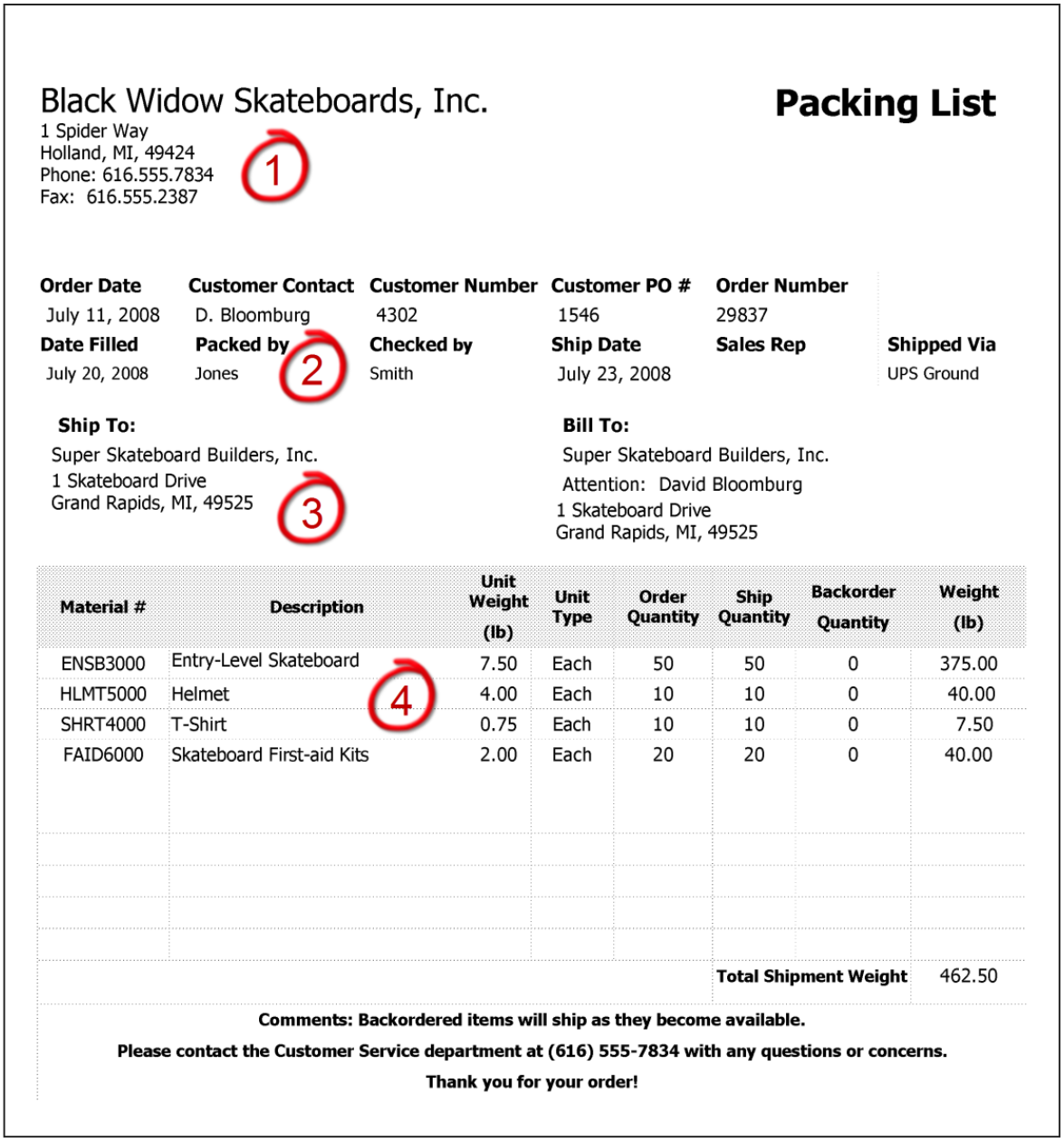

Black Widow Skateboards, Inc.
1 Spider Way
Holland, MI, 49424
Phone: 616.555.7834
Fax: 616.555.2387

1

Packing List

Order Date	Customer Contact	Customer Number	Customer PO #	Order Number	
July 11, 2008	D. Bloomburg	4302	1546	29837	
Date Filled	**Packed by**	**Checked by**	**Ship Date**	**Sales Rep**	**Shipped Via**
July 20, 2008	Jones	Smith	July 23, 2008		UPS Ground

2

Ship To:
Super Skateboard Builders, Inc.
1 Skateboard Drive
Grand Rapids, MI, 49525

3

Bill To:
Super Skateboard Builders, Inc.
Attention: David Bloomburg
1 Skateboard Drive
Grand Rapids, MI, 49525

Material #	Description	Unit Weight (lb)	Unit Type	Order Quantity	Ship Quantity	Backorder Quantity	Weight (lb)
ENSB3000	Entry-Level Skateboard	7.50	Each	50	50	0	375.00
HLMT5000	Helmet	4.00	Each	10	10	0	40.00
SHRT4000	T-Shirt	0.75	Each	10	10	0	7.50
FAID6000	Skateboard First-aid Kits	2.00	Each	20	20	0	40.00
					Total Shipment Weight		462.50

4

Comments: Backordered items will ship as they become available.
Please contact the Customer Service department at (616) 555-7834 with any questions or concerns.
Thank you for your order!

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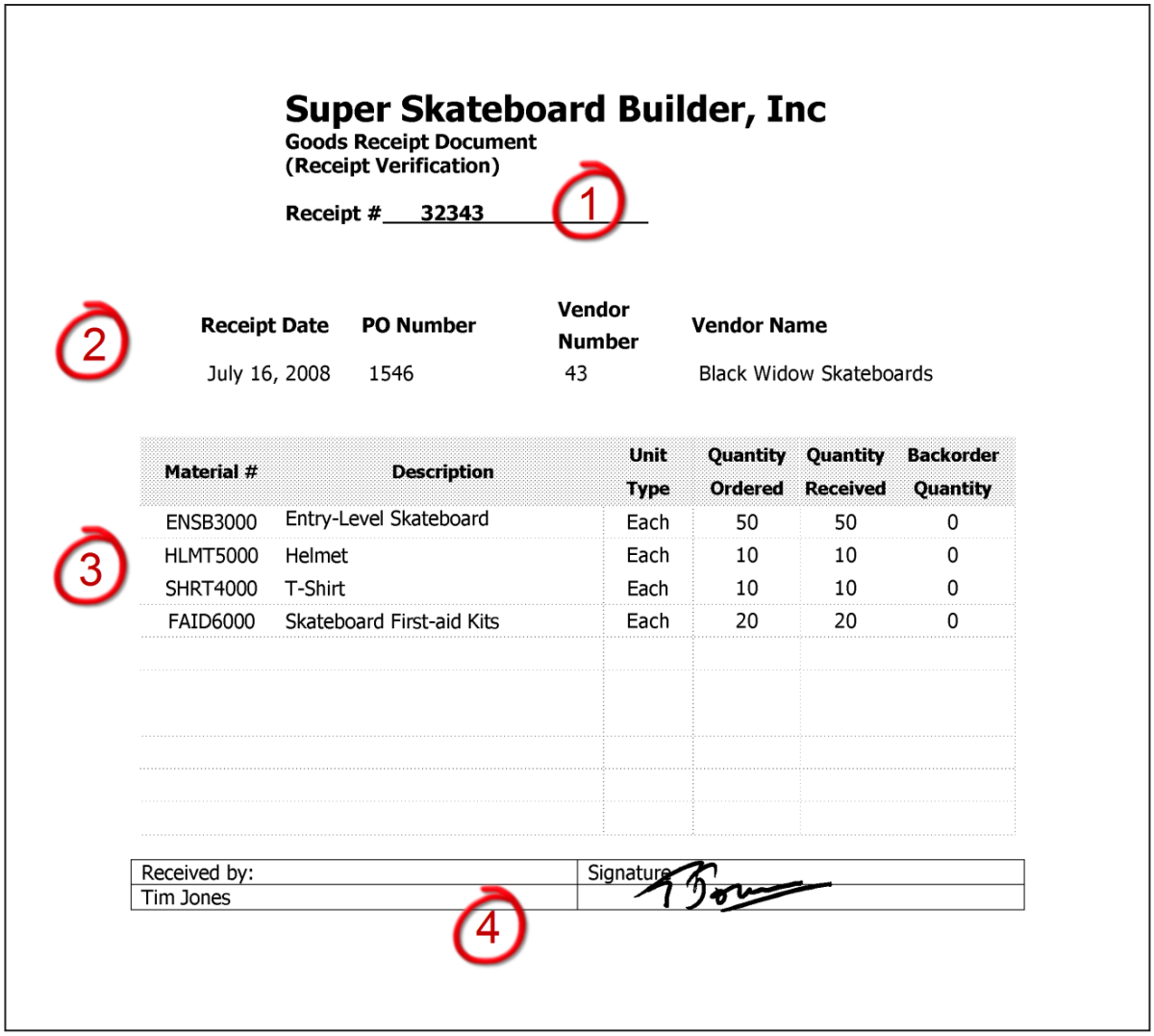

Super Skateboard Builder, Inc
Goods Receipt Document
(Receipt Verification)

Receipt # 32343 (1)

(2)

Receipt Date	PO Number	Vendor Number	Vendor Name
July 16, 2008	1546	43	Black Widow Skateboards

(3)

Material #	Description	Unit Type	Quantity Ordered	Quantity Received	Backorder Quantity
ENSB3000	Entry-Level Skateboard	Each	50	50	0
HLMT5000	Helmet	Each	10	10	0
SHRT4000	T-Shirt	Each	10	10	0
FAID6000	Skateboard First-aid Kits	Each	20	20	0

Received by:	Signature
Tim Jones	

(4)

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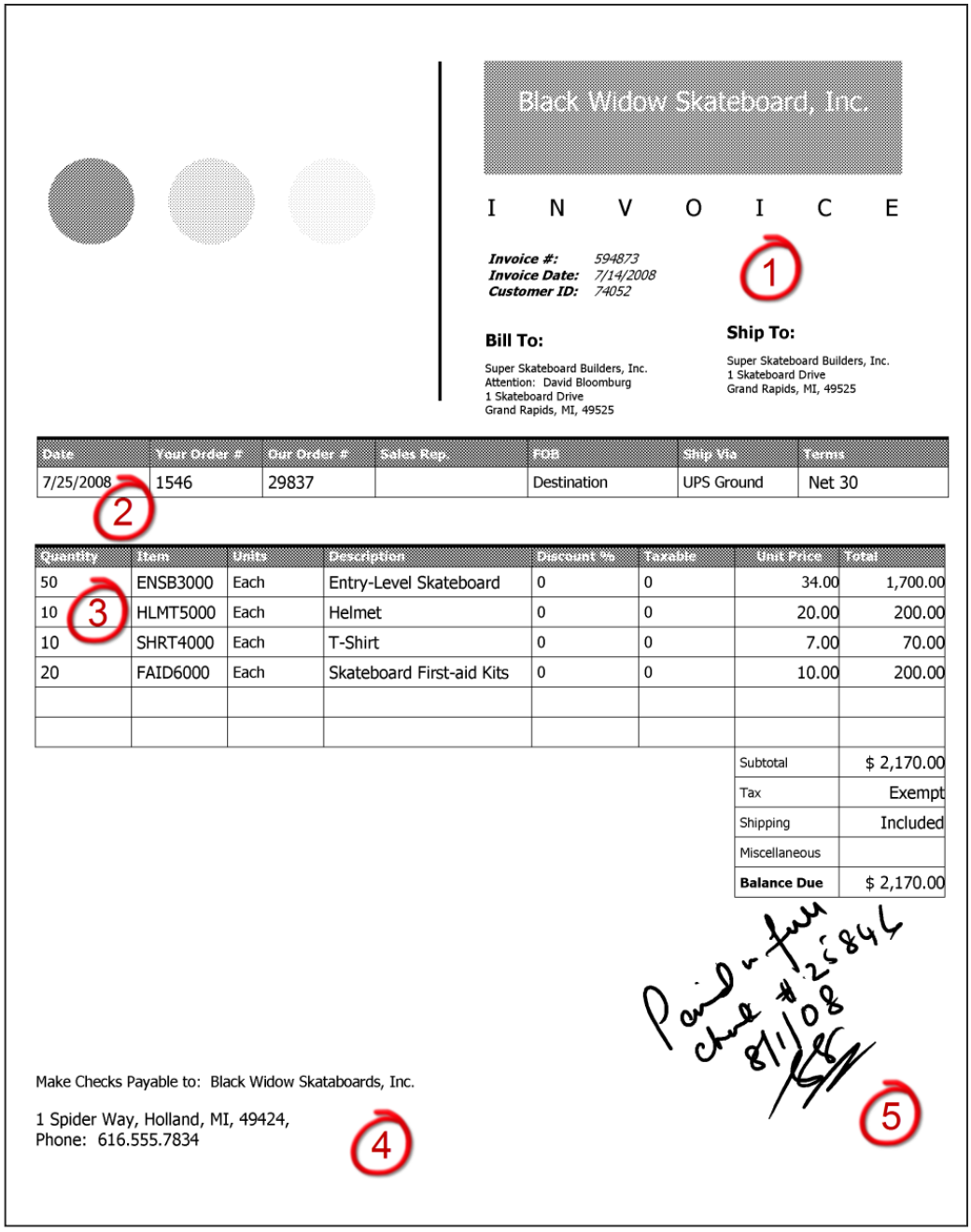

Black Widow Skateboard, Inc.

I N V O I C E

Invoice #: *594873*
Invoice Date: *7/14/2008*
Customer ID: *74052*

1

Bill To:

Super Skateboard Builders, Inc.
Attention: David Bloomburg
1 Skateboard Drive
Grand Rapids, MI, 49525

Ship To:

Super Skateboard Builders, Inc.
1 Skateboard Drive
Grand Rapids, MI, 49525

Date	Your Order #	Our Order #	Sales Rep	FOB	Ship Via	Terms
7/25/2008	1546	29837		Destination	UPS Ground	Net 30

2

Quantity	Item	Units	Description	Discount %	Taxable	Unit Price	Total
50	ENSB3000	Each	Entry-Level Skateboard	0	0	34.00	1,700.00
10	HLMT5000	Each	Helmet	0	0	20.00	200.00
10	SHRT4000	Each	T-Shirt	0	0	7.00	70.00
20	FAID6000	Each	Skateboard First-aid Kits	0	0	10.00	200.00

3

Subtotal	$ 2,170.00
Tax	Exempt
Shipping	Included
Miscellaneous	
Balance Due	$ 2,170.00

Paid in full
Check # 25846
8/1/08

5

Make Checks Payable to: Black Widow Skataboards, Inc.

1 Spider Way, Holland, MI, 49424,
Phone: 616.555.7834

4

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Appendix B. A table with a list of questions for the procurement process

Chapter 3 Procurement Process Group Members: _____

Process Steps / Questions	Create Requisition	Create & Send Purchase Order	Vendor Send Shipment & Invoice	Receive Shipment	Receive Invoice & Send Payment
Which student in your group is responsible for this step?					
What triggers this step?					
Which functional area is involved in this step?			Various functional areas at the vendor side.		
What document is received and/or created in this step?	Received: N/A Created:	Received: Created:	Received: Created:	Received: Created:	Received: Created:
What are the key data in each document?	For this question, you do not need to write down answers in this table. But you need to understand the key areas on the document and be prepared to answer instructor's question later.				
For the document that is created in this step, how many copies are generated? Which functional area keeps each copy of the document?			NA/ N/A		1 copy of the payment is sent to vendor

"Vendor Send Shipment & Invoice" in shaded because it is an activity that happens outside of the fictitious skateboard company. All other activities happen within the company.

STATEMENT OF PEER REVIEW INTEGRITY

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